

8th Annual Coal Stripping Number

COAL MINING

APRIL, 1951

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VOLUME 28, No. 4

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Duquesne Light Co.'s Harwick Mine

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with Kennametal Bits



James H. Truax, mine superintendent, says, "We checked the performance of 100 Kennametal U-4 Bits and found that they gave a bit cost of \$.0026 per ton, which we consider very good." The cutting was done in a section of the mine where the coal was only medium hard to cut, and in other sections where it was more difficult, the U-7 was put on test. The record there, according to James Truax, was also satisfactory. He says, "The U-7 Bits have helped to make a difficult cutting job easier and more profitable." In this cutting, 14 places were cut between bit changes and 50 places were cut per set of bits.

Beside lowering bit cost, other advantages that are obtained by using Kennametal Bits are more efficient cutting because fewer stops are made to change or set bits, a large saving is also made on machine repair because the bits stay sharp and allow it to cut freer, and due to less changing and fewer dull bits, the cost of bit reconditioning is greatly reduced.

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Officials in an Armstrong Co., Pa. mine report that Kennametal Mining Machine Bits result in 37.5% more cutting per bit life as compared to other carbide bits that have been used. Total tonnage: with other carbide—3,126 tons, with Kennametal—4,994 tons. Service between bit changes was increased from 9 places to 14 places. Bit life was 37.5% longer.

Matthews, Moore Coal Co., Gets Answer to Power Problem



Results of power test made for Mr. Claude Matthews, Supt., Moore Coal Co., Devonia, Tenn., show that Kennametal U-5-H Bits require 29% less power than steel bits. Test was made by a West Virginia consulting company. Particulars are: The machine using steel bits averaged a load of 52 H.P. on the motor while Kennametal averaged 37 H.P. or 29% lower average power. The machine which was rated at 50 H.P. operated at a 2 H.P. overload when steel bits were in service.

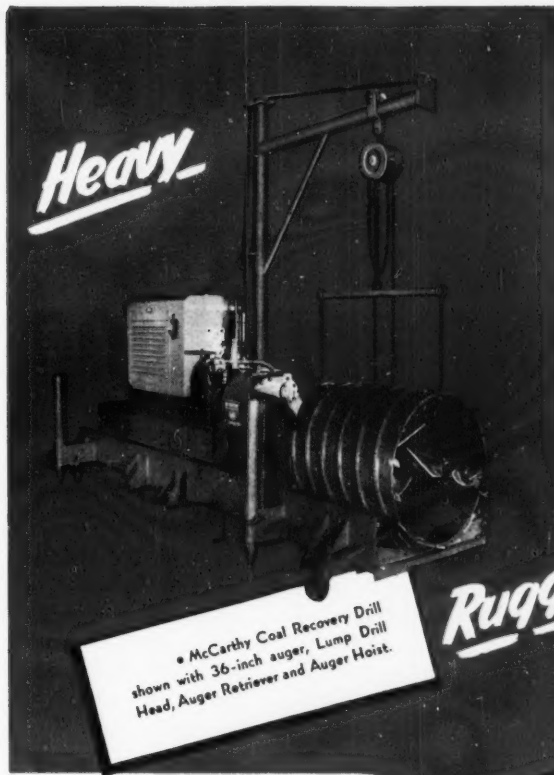
Bit Cost Reduced to .58 cents per ton, Clymer No. 2 Mine, Clearfield Bituminous Coal Corp.



J. F. Simpson, Mine Superintendent, says, "We have used Kennametal Bits for three years and they have cut 284 places per set." Prior to the use of U-7 Bits at the mine, complete bit changes or re-settings were made on each place that was cut. Bit cost averages only .58 of one cent per ton.

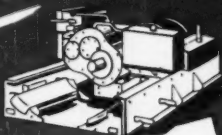
Booklet on Mining Bits Available for the Asking

New styles, sizes, prices and performance data on Kennametal Bits are available in new Mining Catalog M-6 published by Kennametal. You can have a copy by writing us and asking for it.



• McCarthy Coal Recovery Drill shown with 36-inch auger, Lump Drill Head, Auger Retriever and Auger Hoist.

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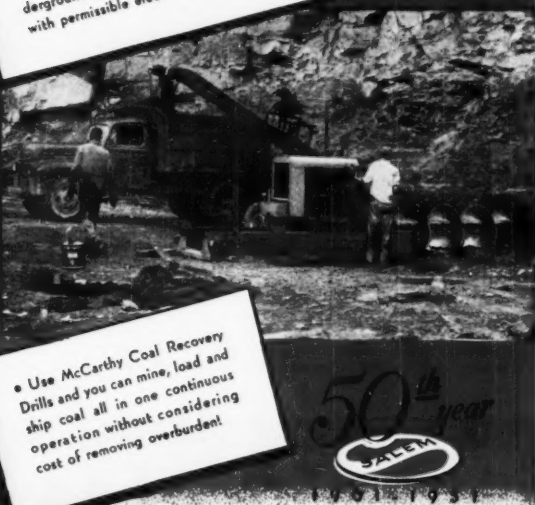
McCarthy Coal Recovery Drills are built for both strip and deep mine operations. They work easily to horizontal depths 60 feet deep or more to deliver an average daily output amounting from 15 to 50 tons per man per shift.

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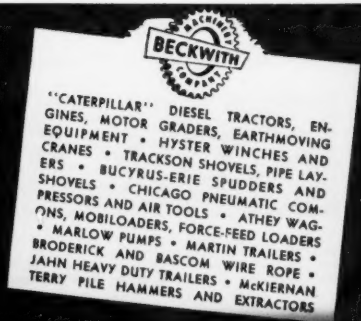
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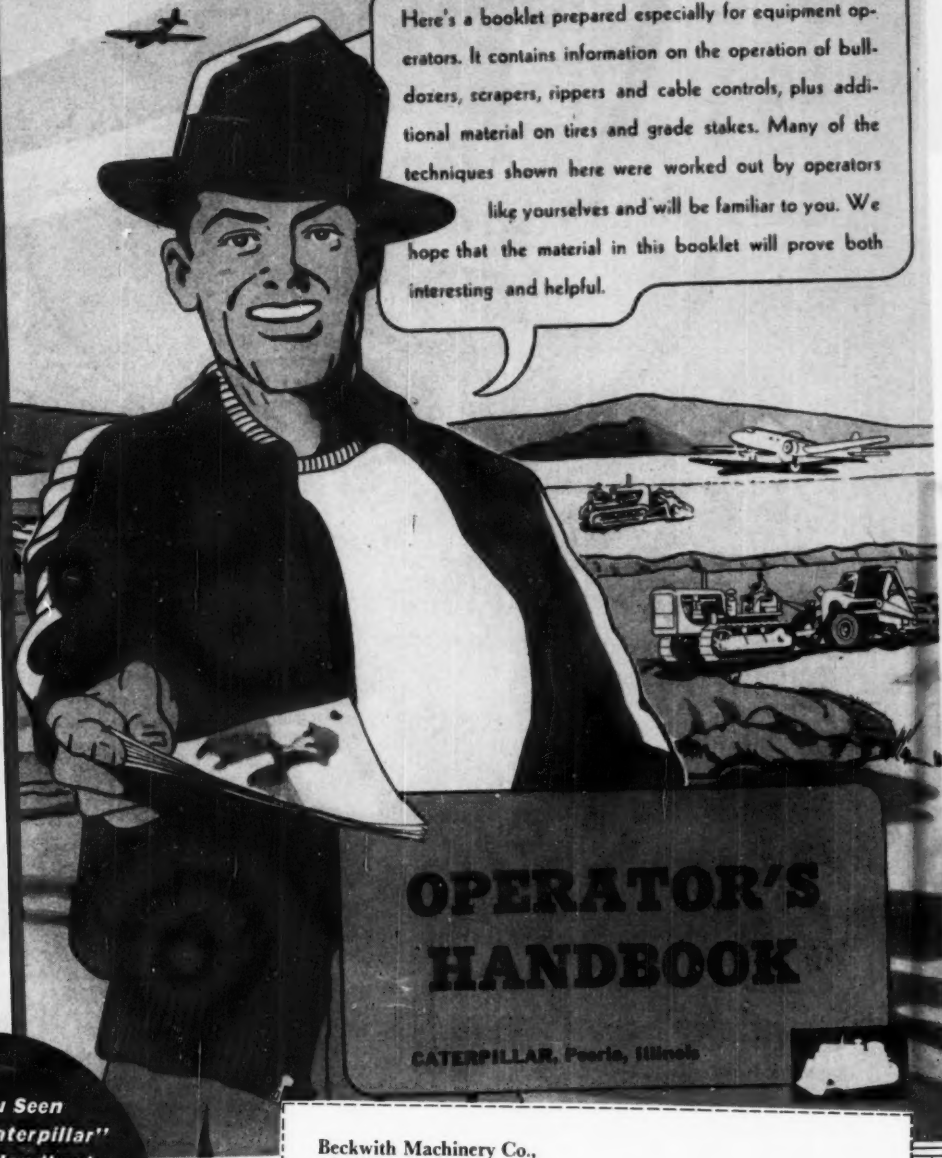
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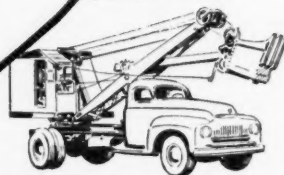
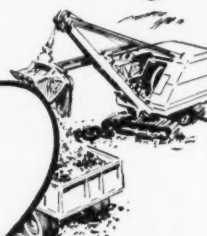
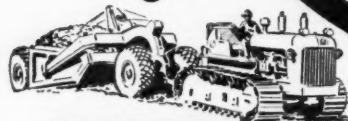
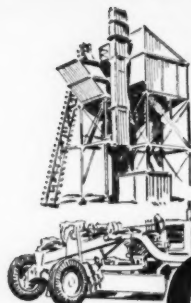
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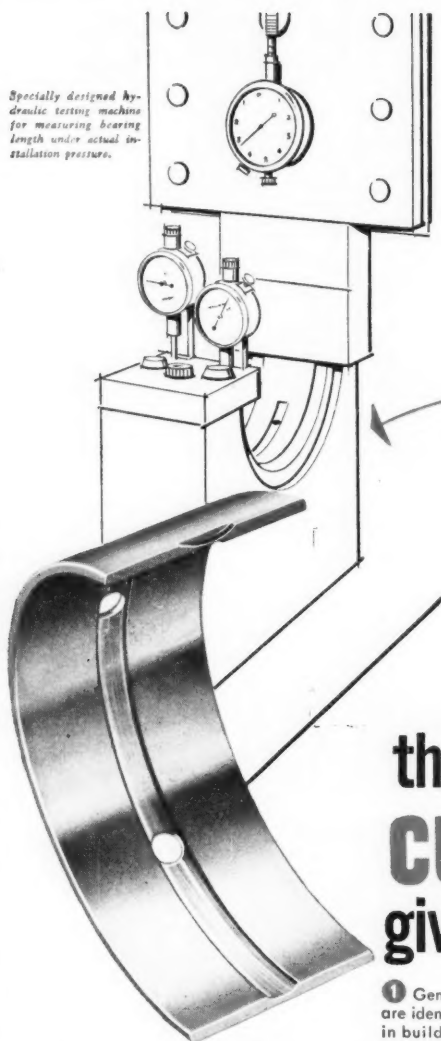


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COAL MINING

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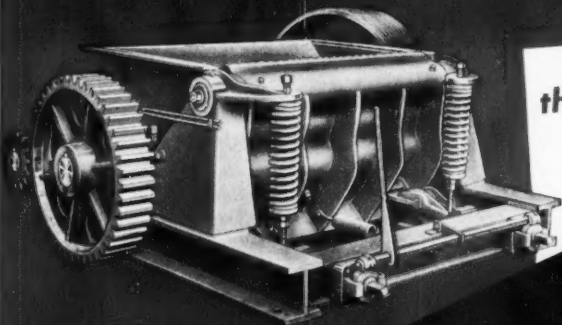
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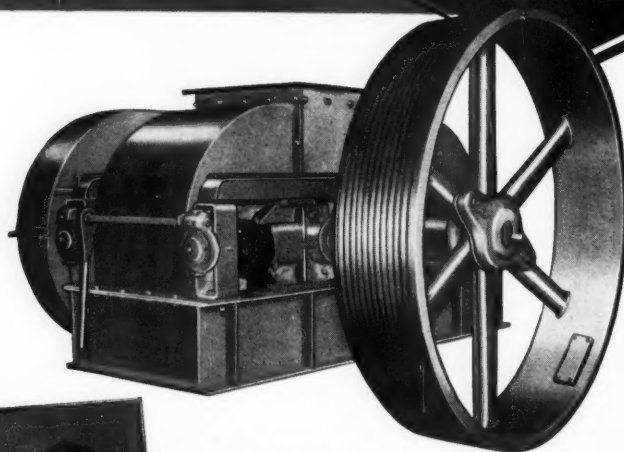


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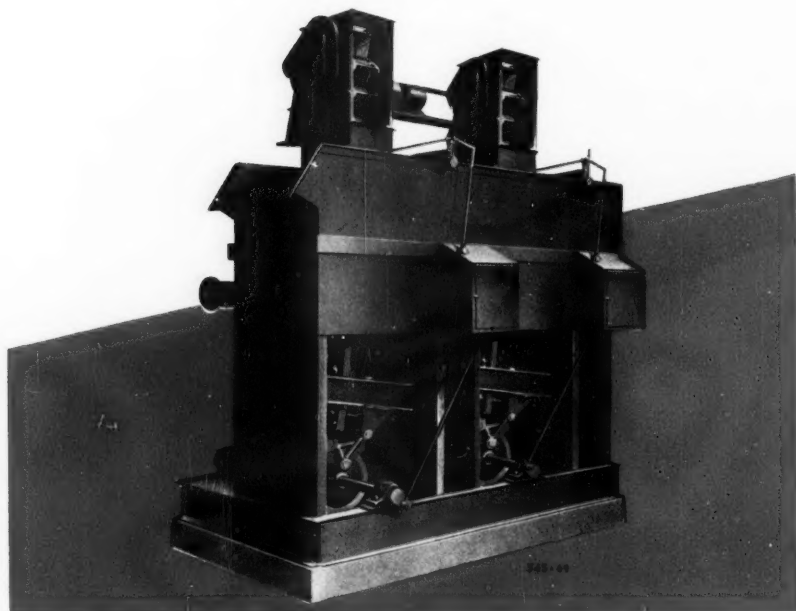
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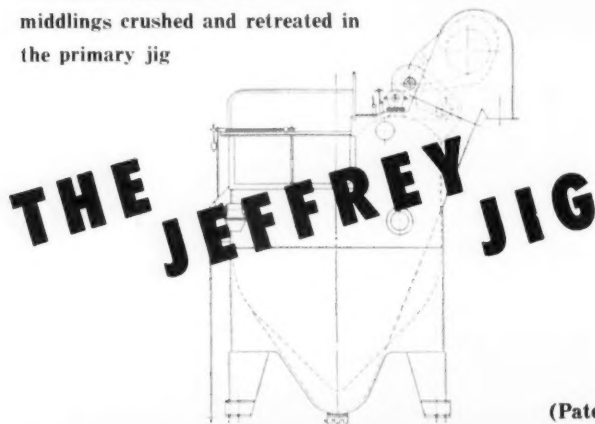
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Improved automatic breathing apparatus, for use in accidents, has been developed by the Mine Safety Appliances Company. Police and fire departments, ambulance crews, hospitals and industrial-plant safety staff could be equipped with it.

It is intended for use in drownings, electric shocks and all kinds of asphyxiation, and is suitable for use even on newly-born babies.

The name "Pneolator" has been coined for it. Its use requires only short training.

The device includes a rubber and plastic mouthpiece connected to two valves by four-foot lengths of rubber. One of the valves administers oxygen, from a holding tank, with positive pressure at regular intervals. The other valve lets oxygen flow only when the patient inhales and stops the flow when the patient exhales. The valves are arranged so that they interchange automatically, depending upon whether or not the patient is breathing.

The artificial respiration valve delivers oxygen to the lungs of a victim whose breathing has stopped. It does not suck air from the lungs, however. When the proper amount of oxygen has been admitted into the lungs, the valve shuts off. The elastic walls of the lungs and the flexible muscles of the diaphragm and chest cause exhalation.

Automatic intermittent positive pressure breathing was first developed during World War II at the earo-medical laboratories of the Air Force, Wright Field, Dayton, Ohio. The differential pressure instrument was designed to sustain breathing of injured airmen at high altitudes.

This new artificial respiration apparatus is unlike others in several respects. Principal among these is that the pressure of the oxygen administered by the cycling valve can be varied to meet a wide range of conditions. The valve can be set from a very gentle low pressure up to little over normal atmospheric pressure.

Because boys are slower to develop physically and mentally than girls they should enter the first grade, not at the traditional six years of age, but at least three to eight months later. A saving of \$150,000,000 to \$300,000,000 to American taxpayers would result if this new age entrance were adopted

officially, Dr. Frank R. Pauly, director of research of the Tulsa, Okla., public schools, told the American Association for the Advancement of Science here.

While psychologists and doctors have long realized that there is a sex difference in development of children, little application has been made of this fact to the nation's schools. Girls, Dr. Pauly has found in study of Tulsa school children, develop in nearly all respects more quickly than boys.

Less behavior troubles and better mental outlook would be obtained if immature boys stayed behind in kindergarten or nursery school longer than girls of the same chronological age.

"There will be less frustration for boys, their parents, and their teachers if the slower development of boys is recognized and provided for through extension of kindergarten," Dr. Pauly said. He believes that state legislation could put into effect the differential in the age of entering school.

The difference in maturity rate between boys and girls has long been recognized in the fact that many states have a three year differential in minimum legal ages for marriage, 18 years for girls and 21 years for boys. One of the problems recognized is persuading the public that the difference between boys and girls is real and should be taken into account. This may involve the better support for kindergarten and nursery school education, Dr. Pauly suggested.

Even the mental tests that are used to rate the capabilities of boys and girls should be changed to take account of the difference between the sexes. Upon a six month age differential girls will average about four points above the present published normal scores and boys about four points below the present accepted average figures.

Offering conventional full day school of a first grade to immature children of either sex, Dr. Pauly argued, is a great waste of educational effort. Educating immature children, particularly boys, too early brings about many unnecessary frustrations and mental hygiene problems that plague parents and teachers for years.

Mr. T. G. Gerow, formerly associated with the Truax-Traer Coal Co., has been appointed President of the West Virginia Coal & Coke Co., succeeding Mr. Charles Dorrance.

Here and There in the Coal Industry

Mr. James L. Hamilton, Vice President in Charge of Operations, announced that Mr. Charles E. Walker, the present General Manager of the Island Creek properties, is being transferred to fill a similar position for Pond Creek Pocahontas Company. This is a new position being created in view of Pond Creek's expanding Kentucky and West Virginia divisions and the consequent need for increased executive direction. Mr. Walker will headquarter at Paintsville, Kentucky.

Mr. Walker will be replaced at Island Creek as General Manager by Mr. Hubert H. Barber, presently manager of the Bartley Division of Pond Creek Pocahontas Company. Mr. Barber's present position will be filled by Mr. Nicholas T. Camicia, who has been serving as a Division Superintendent at Island Creek.

Another change at the Division Manager level calls for the transfer of Mr. William F. Diamond, presently manager of Marianna Smokeless Coal Company, a subsidiary of Pond Creek Pocahontas Company, to the Kentucky-Elkhorn Division of Pond Creek as Manager. Mr. Diamond will replace

Mr. W. A. Hasiam, who recently resigned.

Mr. Diamond will be succeeded by Mr. David E. Bayer, who is presently Assistant to Manager of the Bartley Division of Pond Creek Pocahontas Company.

J. H. Wallin of Philipsburg has been re-elected to the presidency of the Central Pennsylvania Open Pit Mining Association whose principal office is at Philipsburg. Other officers elected are B. M. DuBois, Clearfield, vice-president; Ray S. Walker, Bigler, secretary; and Herman S. Moore, Philipsburg, treasurer. Directors elected, in addition to the above, are Robert Bailey, Morrisdale; Alex. Bailey, Philipsburg; Earl M. Brown, Clearfield; J. J. Earnest, Osceola Mills; Ralph Kuhns, Philipsburg; Everett Moore, Punxsutawney; Joseph Radomsky, Osceola Mills; O. T. Shingledecker, Philipsburg; Lewis Stein, Philipsburg; Joseph Waroquier, Clearfield, and Frank B. Wood, Sr. of Barnesboro. All officers and directors are incumbents.

G. Albert Stewart of Clearfield was retained as Executive Secretary and Frank A. Whitsett of Clearfield as Association Counsel.

Following the election Mr. Stewart said the association had gained in strength during the past year and that this, together with confusion over price controls and other government regulations, matters with which incumbent officers and directors are familiar were factors motivating the membership in re-electing all incumbents.

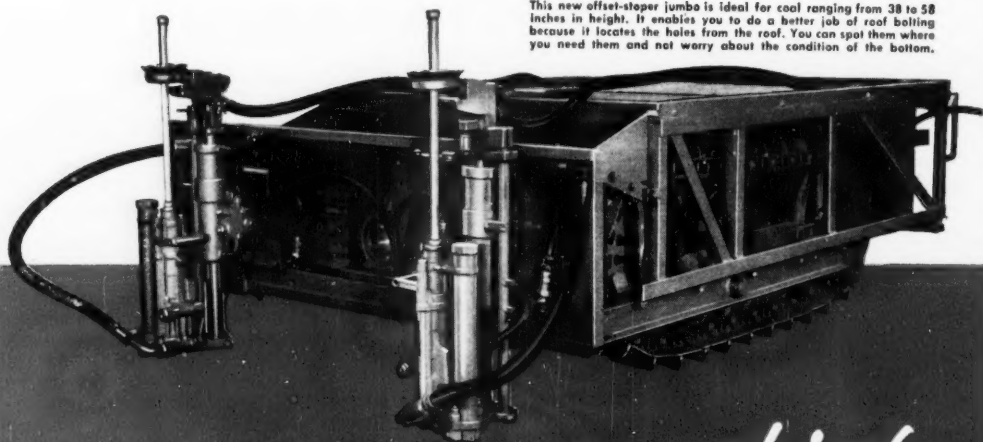
Mr. Stewart said that although coal demand had been low, and prices even lower, the open pit industry had maintained its position during 1950, producing approximately 21 million tons in Pennsylvania, about 22 per cent of the total bituminous production.



James B. Morrow, left, of Pittsburgh, Pa., first vice-president of Pittsburgh Consolidation Coal Co., is shown receiving the Erskine Ramsay Medal from Donald M. McLaughlin, president, American Institute of Mining and Metallurgical Engineers, for "outstanding achievement in the production, beneficiation, and utilization of coal." The presentation was made here Feb. 21 at the annual banquet of the A.I.M.E.

K. N. Quickel, manager of Bethlehem Collieries, died on December 4 after some months' sickness. Mr. Quickel, a graduate of Pennsylvania State College, worked in coal mines in Tennessee, Kentucky and West Virginia before affiliating with Bethlehem Collieries in 1916. He was appointed assistant to the manager in 1934 and manager in 1940.

This new offset-stoper jumbo is ideal for coal ranging from 38 to 58 inches in height. It enables you to do a better job of roof bolting because it locates the holes from the roof. You can spot them where you need them and not worry about the condition of the bottom.



Here's the latest thing in Roof Bolting

A New Offset-Stoper Jumbo by Le Roi-CLEVELAND

Check these features and you see why this revolutionary jumbo makes roof-bolting faster, easier, more thorough.

Now you can do your roof-bolting jobs faster and better than ever. The new Le Roi-CLEVELAND offset-stoper jumbo does all the hard work — carries the stopers, the drill steel, in fact all the material needed for a full shift of roof bolting. Your miners are less tired — get more done. Here's why:

Mobility

The jumbo is mounted on an electrically driven (permissible) crawler tractor. It gives you three forward speeds up to 3 mph and one reverse speed (1 mph). Mercury clutch for smooth operation. Brakes for turning. Side

driver seat with full controls for travel in either direction.

Faster drilling and bolting

Jumbo carries 2 Le Roi-CLEVELAND S-11S offset-stoppers, each with 12-inch steel change. The feed-legs of these stopers do two jobs — raise the machines to drilling position and position the dust collectors at the drilling face. All controls are conveniently located so that you can drill holes, drive bolts, and set nuts with one set-up.

Positive dust control

On this new unit, there's a separate dust collector for each stoper drill. The fines are deposited as follows: 95% in a primary tank and 5% in a filtered secondary tank having a filter area of 60 sq. ft. for each stoper.

Add all these things up and you have the latest thing in roof bolting. Try this new unit in your property. Watch your costs drop, production rise. Write for complete details.

See the new Stoper Jumbo at the 1951 Coal Show of the American Mining Congress, Booth No. 1021, Cleveland Public Auditorium, May 14-17



LE ROI COMPANY

RD-38

CLEVELAND ROCK DRILL DIVISION

12500 Berea Road, Cleveland 11, Ohio

Plants: Milwaukee, Cleveland and Greenwich, Ohio



The Model 4500 Manitowac shovel loading overburden into one of the 27 cubic yard Euclid haulage units at the Grafton Coal Company.

Stripping Coal in Northern West Virginia, Western Pennsylvania and Eastern Ohio

While methods of strip mining have improved considerably in the past quarter century there are still better ways of getting our needed solid fuel supply and those better ways must be found. Prerequisites to solve these problems are knowledge and skill. We need to apply scientific and technical knowledge as a basis of wisdom in solving these problems. Science and technology have enabled men to make his living more easily, have enabled him to live longer and more comfortably, have enabled him to make tools, machines and instruments that allow him to accomplish what he could not accomplish because of muscular and sensory limitations. Man now travels faster and farther, higher in the air, deeper in the ocean, than ever before. All that is the result of improved technology, based on scientific research. Material services of science and technology are needed in efficient industrial production. Rigid standards of scientific truth to the solu-

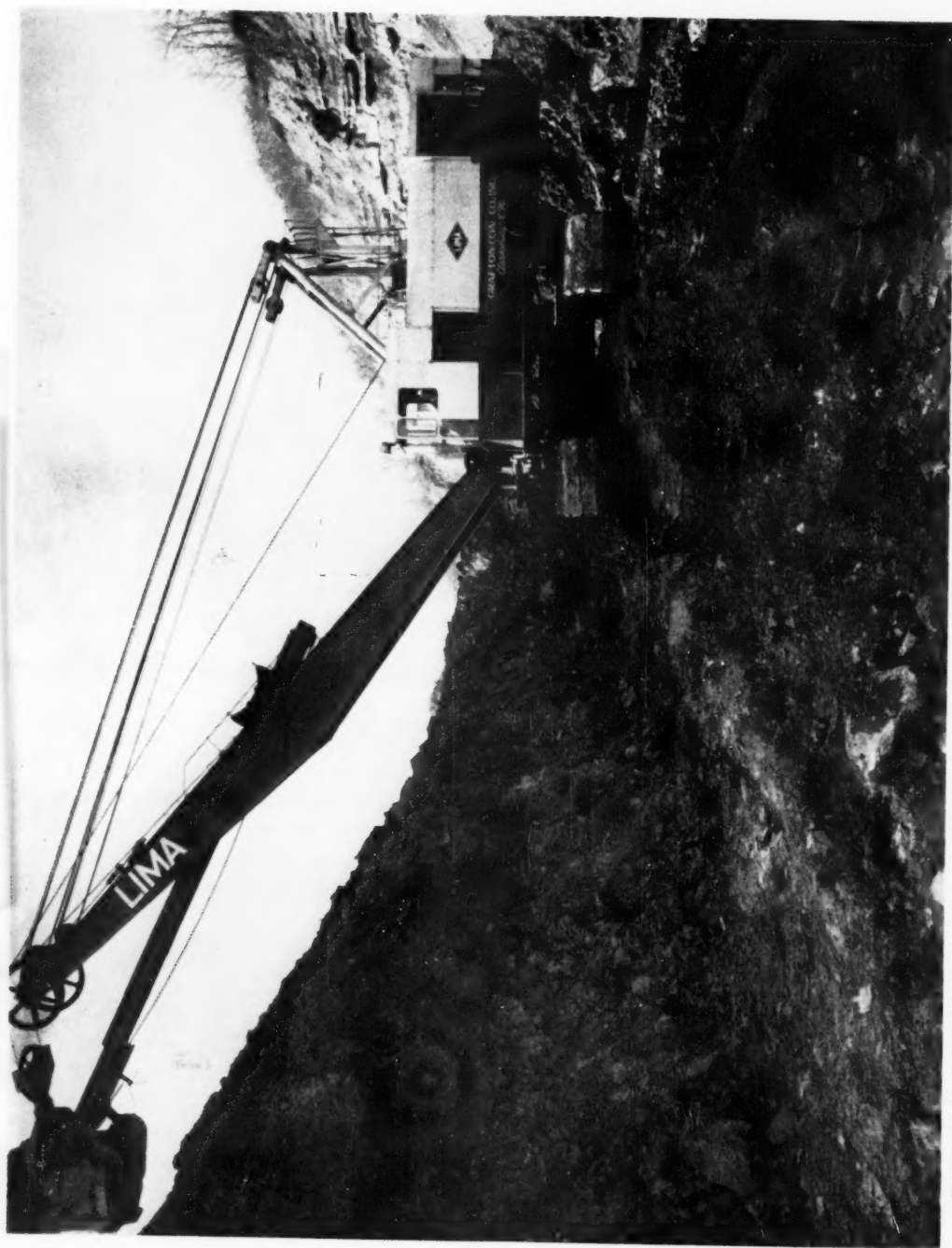
tion of human and technologic problems needed to be applied more in the coal mining industry.

The largest coal stripping opera-

tion in Northwestern West Virginia is that of the Grafton Coal Company, located between Flemington and Galloway, in Barbour County,



Close up of a loaded 27 cubic yard Euclid haulage unit at the Grafton Coal Company.



This is the New Lima Model 2400 stripping shovel at the Grafton Coal Company, Inc. This shovel is larger than the Manitowac Model 4502.



Model 1006 Osgood stripping shovel working at the McCoy Brothers.

This part of West Virginia is very highly eroded and it appears like three-fifths of the Redstone and Pittsburgh seams of coal have been washed away.

Overburden on the Pittsburgh seam runs 4 feet of sandstone on the coal, 12 feet of soapstone, lime rock in various thicknesses and 6 feet of yellow shale. This cover is drilled for shooting with McCarthy earth drills. The coal runs about 5 feet in thickness.

The Grafton Coal Company uses about all types of stripping equipment available today, including a 60 inch highwall auger they developed themselves. This auger is 60 inches in diameter and has drilled up to 120 feet in depth. It is still in the experimental stage and the present drive unit has 4 electric motors.

Up to 65 feet of overburden is being moved with a Manitowac model 4500 shovel having 40 foot boom and 5½ cubic yard bucket. This shovel was loading into two 27 cubic yard Euclid hauling units, powered by 275 hp Cummins engines. These two haulage units were moving up to 3,000 cubic yards of overburden in an 8 hour shift. An

average of three 85 foot wide cuts were being made.

In another pit a brand new Lima Model 2400 shovel was stripping overburden. This shovel is powered by a 397 Caterpillar engine and has a 6 cubic yard Esco bucket. Most of the coal is hauled in trucks equipped with 13 ton Penn bodies.

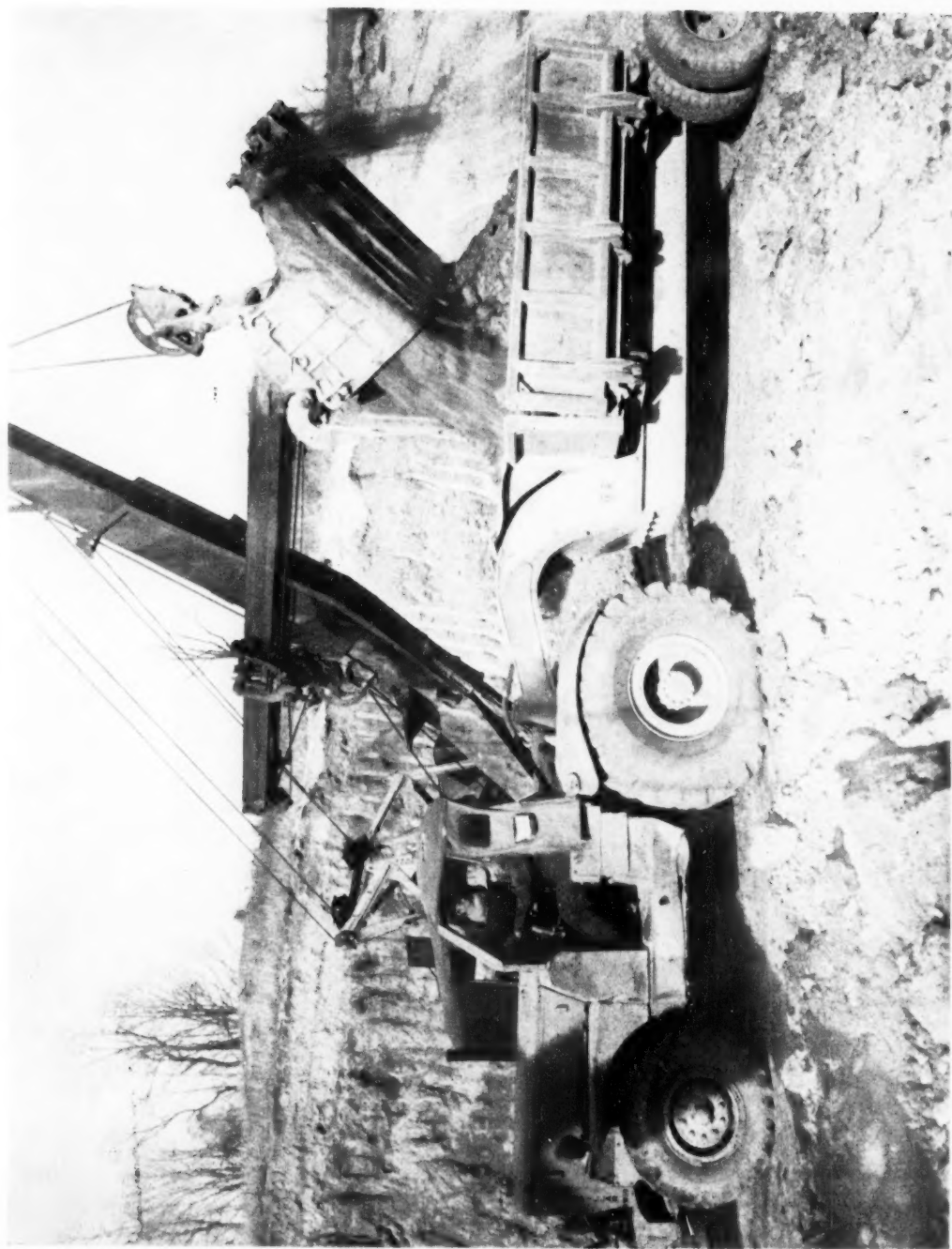
Between Galloway and Phillippi the Pittsburgh seam which runs up

to 7 feet in thickness. The overburden consists of 6 feet of yellow shale, 8 feet of blue shale, 6 feet of sandstone mixed with shale, and top soil. Stripping is done with a Model 1006 Osgood, two Model 906 Shovels, one 80-D Northwest shovel and 3 D W 10 Caterpillar wagons.

In that same vicinity the Davies Coal Company is using a 36 inch McCarthy highwall coal auger in 4

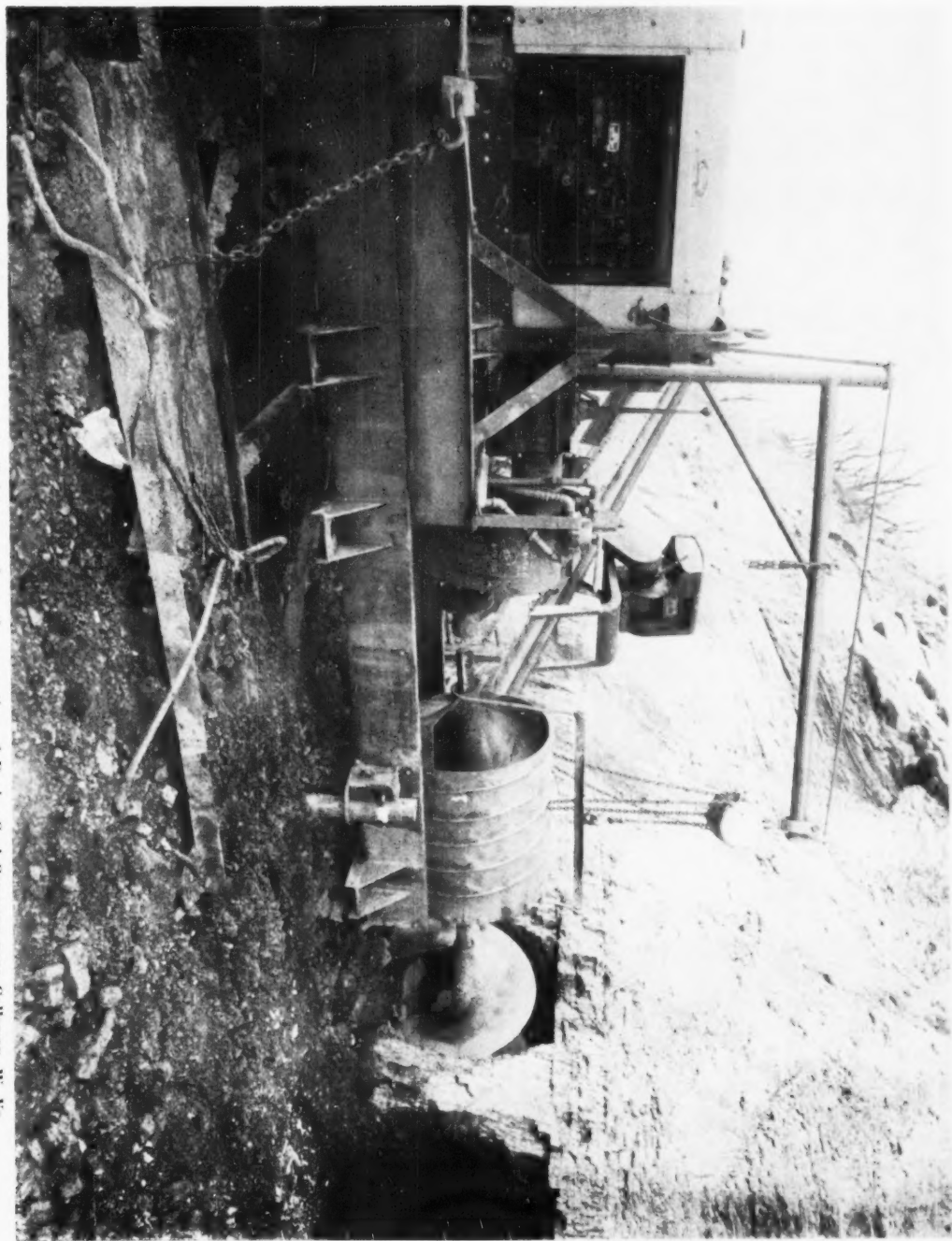


One of the two Model 906 Osgood shovels loading coal at the McCoy Bros.



One of the three DW-10 Caterpillar wagons used to haul overburden at the McCoy Brothers operation.

The 36-inch McCarthy coal auger in Redstone coal at the operation of Davies Coal Company near Galloway, W. Va.





Caterpillar D-8 tractor pulling Athey wagon at Paul Garbarts operation near Albright, West Virginia.

foot thick Redstone coal. Up to 100 feet in depth has been drilled by this auger and more than 50% of the production runs over 2 inch lump. The output is sold as steam coal.

Farther north, near Reedsville, the Atlas Excavating Company from Pittston, Pennsylvania, is stripping the Bakerstown seam which is the top seam of coal in that area. This coal is about 40 inches thick and lies on a slight

pitch as a rule. It is fortunate for the stripper that cover thickness corresponds with the pitch of the coal. This operator is using a Model 2,000 Manitowac shovel and 2 tractors to move up to 20 feet of overburden. Overburden is blue shale that turns to yellow shale, and top soil. The overburden does not require shooting but the coal is hard and must be shot.

East of Reedsville, near Albright, Paul Garbart from Uniontown,

Pennsylvania, is also stripping the Bakerstown seam lying in peaks of the mountain. There the coal is 36 inches thick and lies on a pitch. Overburden is mostly brown shale and loam which are being moved with 2 Caterpillar D-8 tractors, 2 HD19 A-C tractors, 3 Athey wagons and 2 Lorain shovels. This operation has just been started and no coal has been loaded.

Probably the largest coal stripper in the entire state of West Virginia

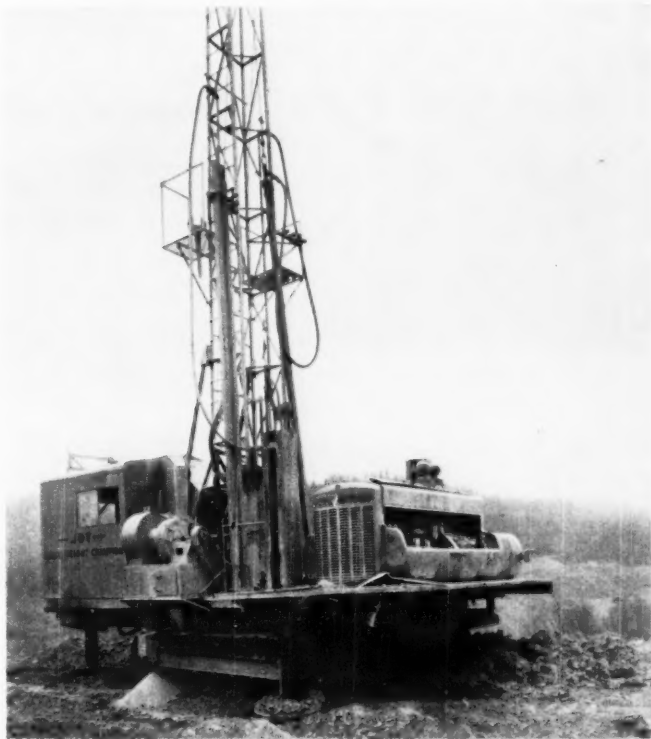


A-C, H D-19 tractor pushing overburden on mountain top at Paul Garbarts operation near Albright, W. Va.



A-C, H D-19 tractors pushing spoil at Paul Garbarts operation.

Right: The new Joy rotary air-blast drill at the No. West Virginia operation of the Weirton Construction Company. This drill utilizes a tri-cone roller bit which continuously pressure-cuts the rock. Compressed air removes cuttings and cools the bits. Instantaneous removal of cuttings is the prime factor in its high speed drilling. Cuttings are piled beside the machine so that they can be used for stemming. Holes from $5\frac{1}{8}$ inches to $7\frac{3}{8}$ inches in diameter can be drilled. Hydraulic feed and semi-automatic chuck actuate the drill stem. Air compressor is mounted on the machine. Levelings are provided. Diesel or electric power is furnished.



Below: Highwall of about 55 feet of solid lime rock at the operation of the Weirton Construction Co. After blasting this rock is moved with 2 Marion model 111-M shovels.





A DW-10 Caterpillar wagon pulling a converted scraper in moving top soil at a Panhandle operation of the Weirton Construction Co.



Self-propelled scraper moving top soil at one of the Panhandle operations of the Weirton Construction Co.



An A-C, HD-19 tractor pushing top cover at one of the Panhandle pits of the Weirton Construction Co.

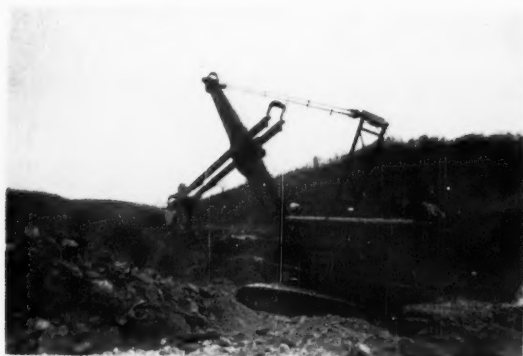
is the Weirton Construction Company with headquarters at Weirton, West Virginia. The main operation of this stripper is in the West Virginia Panhandle where its holdings are so vast it has 20 years work at the present rate. It also has an operation in the Pittsburgh seam coal at Dunbar, near Charleston, West Virginia, and an operation in the vicinity of Fairmont, West Virginia. At the latter operation it is moving up to 60 feet of solid lime-rock to get 42 inches of the Upper Freeport coal. Drilling is done with a new type blast hole drill using an exclusive principle of rotary air-blast drilling, built by the Joy Manufacturing Company and said to be equivalent to 3 or more churn type drills. This drill is operated by 2 men and has drilled up to 60 feet of solid rock, making a 6 $\frac{1}{4}$ inch hole.



One of the McCarthy blast hole drills working at a Panhandle operation of the Weirton Construction Company.



Jeager air compressor used in breaking large pieces of sandrock at panhandle operation of the Weirton Construction Company.



One of the Marion Model 111-M shovels moving limerock at the No. West Virginia operation of the Weirton Construction Company.



Model 1201 Lima shovel making first cut at the No. West Virginia operation of Weirton Construction Co.

Stripping is done with 2 Marion Model 111-M shovels and a Lima Model 1201 shovel having Esco bucket.

In the Panhandle district the Weirton Construction Company is operating 3 large pits, using 2 large draglines, many stripping shovels and scrapers, Caterpillar DW-10 wagons and many tractors. Overburden varies from loam and shale to solid sandstone. Drilling is done with several McCarthy vertical drills, assisted with jackhammers driven by Jaeger compressor. The Pittsburgh seam of coal is being stripped in the Panhandle and the output is trucked to the National Steel Corporation where it is used for steam generation under specially built boilers.

Atop the Pointview Mountain on Route 22, east of Blairsville, Pennsylvania, the J. & K. Coal Company is stripping the Central Pennsylvania Miller "B" seam of coal. At this point the Miller "B" coal rises to the west and outcrops. The western Pennsylvania Lower Freeport seam was present on that property and rose to the east. The Freeport coal has been stripped. The Miller "B" seam which the J. & K. Coal Company is stripping is covered by yellow shale interspersed with limerock.

Up to 30 feet of overburden is moved to recover 30 inches of coal. Stripping is done with a Marion Model 371 dragline having 65 foot boom and driven a D-13,000 Caterpillar engine, a Lorain Standard Model 41 shovel with $\frac{3}{4}$ cubic yard bucket and 2 Caterpillar tractors. The coal is loaded with the Lorain shovel.



Close-up of the limerock after blasting at the Weirton Construction Co. Jackhammers are used to break up rock too large for a shovel to move.



Caterpillar Road Patrol, maintaining haulage road in pit at Weirton Construction Company.



Model 1201 Lima shovel moving sandrock overburden at a Panhandle operation of the Weirton Construction Co. Note large rock in foreground.

Near Leckrone, Pennsylvania, south of Uniontown, the S. B. & S. Coal Company is stripping the Redstone seam of coal which must be the purest of the entire deposit of this seam which extends over southwest Pennsylvania and northern West Virginia, for the sulphur

content is less than 1% and it is used for coking. Overburden on this coal is blue shale that turns to yellow shale then top soil. The first 2 cuts of overburden are not shot, but following cuts must be loosened before they can be moved. Stripping is done with a new Model 1006 Osgood

shovel having 45 foot boom, 40 foot stick with shipper shaft raised and a 2 cubic yard bucket.

At Van Meeter, on the Youghiogheny River, just south of Smithton, Pennsylvania, the Baker Coal Company is stripping 9 feet of very high grade Pittsburgh seam coal. This operation is along the river and the coal lies below the bed of the river. Overburden is draw slate, rooster coal, 28 feet of hard rock-like blue shale and 22 feet of loam. The layer of loam is moved with 14 cubic yard and 16 cubic yard Le-Tourneau scraper, pulled and pushed by Caterpillar D-8 tractors. The hard blue shale is stripped with Link-Belt 580 combination shovel having Esco bucket and Link-belt 370 shovel having Esco bucket. Two 7½ hour shifts are worked. The Link-Belt 370 shovel loads coal on the day shift and strips on the night shift.

Lying below the bottom of the river bed water must be pumped from the pit constantly. A 3 inch Barnes pump, gasoline driven, is used for gathering and two 4 inch Gorman-Rupp 440-v D C electric pumps are used to lift the water out of the pit.



The stripping and loading shovel at the operation of the Atlas Excavating Company at Readsville, West Virginia.



Stripping shovel loading out coal at the West Virginia-Pittsburgh Coal Company, near Collier, W. Va.



Coal loading shovel equipped with a 21½ yard ESCO coal loading bucket loading out coal at the West Virginia-Pittsburgh Coal Company, near Collier, West Virginia.



The Marion dragline at the Kepple and Jarvis operation.



D-8 Caterpillar tractor pushing spoil made by the Model 41 Lorain shovel at operation of Kepple and Jarvis.



Standard Lorain Model 41 shovel taking top cut of overburden at operation of Kepple and Jarvis on Pointview Mountain near Blairsville, Pa.



Another Caterpillar D-8 tractor pushing top cover before the Marion dragline at Kepple and Jarvis operation.



The new Model 1006 Osgood shovel stripping at the SBS Coal Company, near Leckrone, Pa.



Overall view of pit at Baker Coal Co., Van Meeter, Pennsylvania.



Link-Belt Model 370 shovel helping install water line in pit at Baker Coal Co., Van Meeter, Pa.

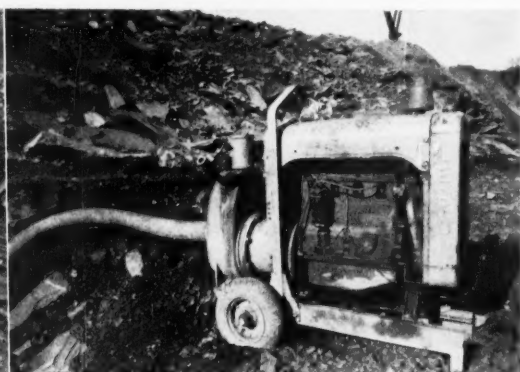
The Huberta Coal Company of Steubenville has two small operations in the vicinity of Steubenville and one near Eldersville, Pennsylvania. At the Eldersville operation it is using a Marion Model 11 shovel for stripping and loading the Pittsburgh seam of coal which averages 5 feet thick but in squeezed area runs as high as 7 feet thick.

At Crafton, Pennsylvania, which is a suburb of Pittsburgh, the Hadrock Coal Company has an operation in the Pittsburgh seam which lies high in the hills. This operation is on old state route 22 between Crafton and Moon Run. Overburden consists of slate on the coal, yellow shale which is interspersed with one or more layers of sandrock running from $\frac{1}{2}$ to $1\frac{1}{2}$ feet thick.

The seam runs from 57 to 64 inches thick. Stripping is done with a Model 820 Lorain shovel having 34 foot boom, 27 foot stick and $13\frac{1}{2}$ yard bucket. Two 3 inch gathering pumps were used in the pit. An International tractor with high-lift attachment was used for loading stored fine sizes of coal. The output from this operation is sold to industrial and domestic trade.



The 2 Gorman-Rupp electric pumps at the Baker Coal Company, Van Meeter, Pa.



The 4 inch gasoline driven Barnes gathering pump at Baker Coal Co., Van Meeter, Pa.

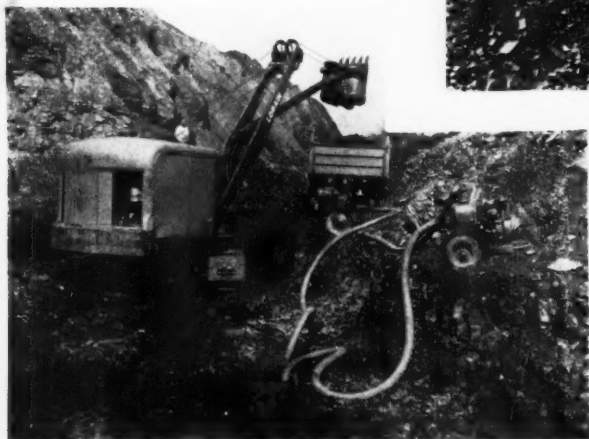


The Lorain Model 820 shovel stripping at the Haddock Coal Company at Crafton, Pennsylvania.

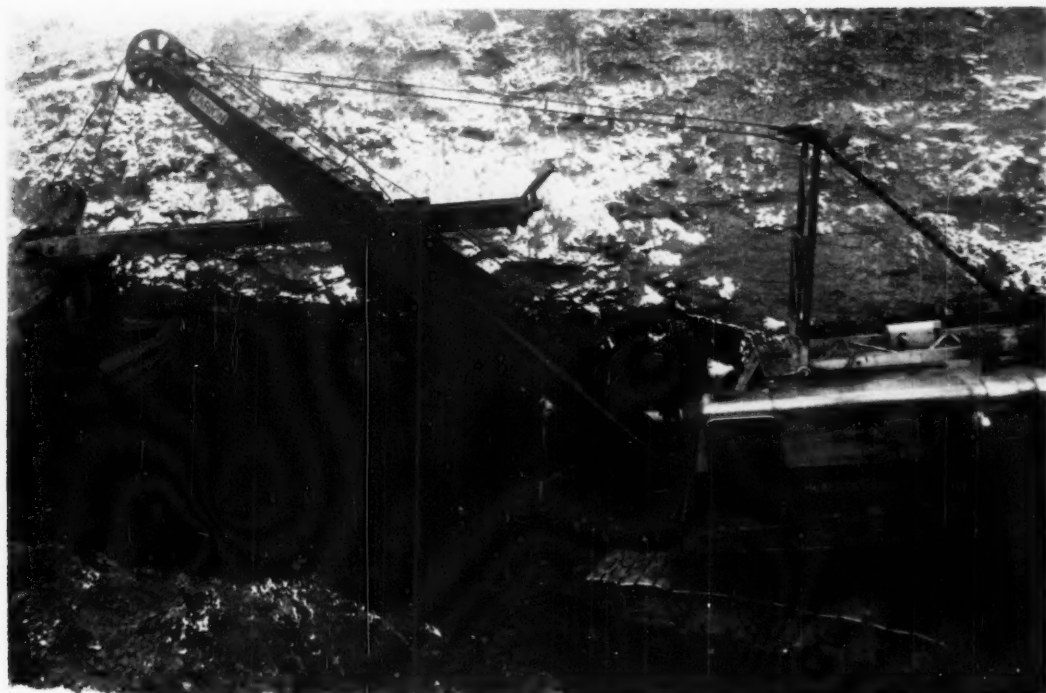


Overburden on the Pittsburgh seam coal at the Haddock Coal Company, Crafton, Pennsylvania

Right: International tractor with high lift attachment loading coal from stockpile at the Haddock Coal Company at Crafton, Pennsylvania.



Left: The Lorain Model 41 loading shovel at the Haddock Coal Company, Crafton, Pennsylvania.



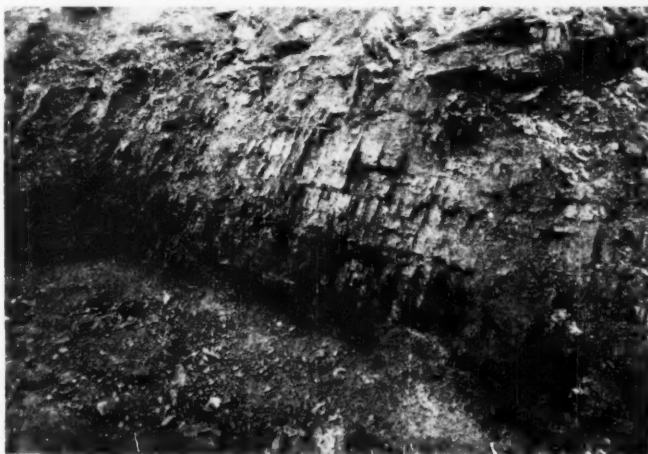
Marion Model 111-M shovel loading out 7 ft. coal at Eldersville pit of Huberta Coal Co.

In the vicinity of Steubenville and Toronto, Ohio, the Ohio Number 8 seam of coal, which is the Pittsburgh seam in Pennsylvania, is strippable and is being recovered at present by the Toronto Coal Company at Knoxville, about 8 miles directly west of Toronto. Overburden consists of 5 feet of gray shale on the coal, from 12 to 20 feet of limestone, yellow shale and loam. Up to 60 feet of cover is moved to recover from 16 to 24 inches of coal. Horizontal shot holes are drilled on 12 feet center, 36 feet deep. Stripping is done with a new Model 2400 Lima shovel having 60 foot boom, 45 foot stick and $4\frac{1}{2}$ cubic yard Esco bucket. Treads on this shovel are 63 inches wide and the unit weighs about 250 tons. A Lorain model 90 shovel with high-lift front and $1\frac{3}{4}$ cubic yard bucket and Northwest Model 80-D shovel with 2 cubic yard bucket also do stripping. All stripping units work three shifts. Coal is loaded with a Model 82 Lorain shovel having $1\frac{1}{2}$ cubic yard bucket. All power units are greased and driven by Gulf products.

The Bruns Coal Company of Steubenville is also stripping the Pittsburgh seam in that vicinity. On the Bruns property the coal runs

from 24 to 42 inches in thickness. Overburden is the same as at the Toronto Coal Company operation. Up to 60 feet of cover is moved with a Manitowac Model 3500 shovel and a Bay City Model 65 Standard shovel which moves the top cut on the off-loading shift. A 636 CFM Joy air compressor is used to break up large rock in stripping. Gulf Oil products are used at this operation

Eight miles farther west is the operation of the Teramana Brothers Coal Mining Company's Mine 45. There the Pittsburgh seam of coal is also being stripped with a Lima Model 1201 stripping shovel, two Caterpillar tractors with LaPlante-Choate hydraulically operated blades. A $1\frac{1}{2}$ cubic yard P & H shovel is used for stripping and loading. Overburden is prepared for



Close-up of the 7 ft. seam of coal at Huberta Coal Co.



Above: Typical highwall at the Toronto Coal Company operation at Knoxville, Ohio.

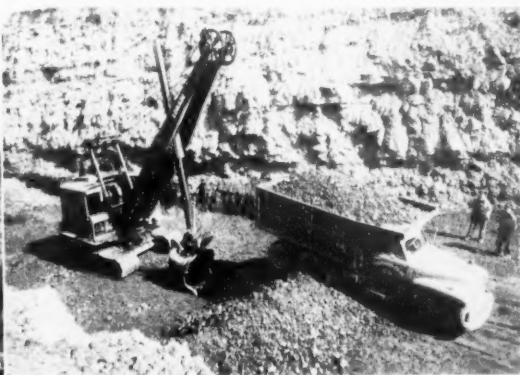


Left: The Lima Model 2100 at the operation of the Toronto Coal Company, Knoxville, Ohio.

Below Left: Model 90 Lorain stripping shovel making first cut at the Toronto Coal Company, Knoxville, Ohio.



Below: Model 82 Lorain shovel loading coal in pit of the Toronto Coal Company.





Truck mounted McCarthy earth drill operating at the Bruns Coal Company.



Model 65 Bay City shovel making top cut of overburden at the Bruns Coal Company near Knoxville, Ohio.



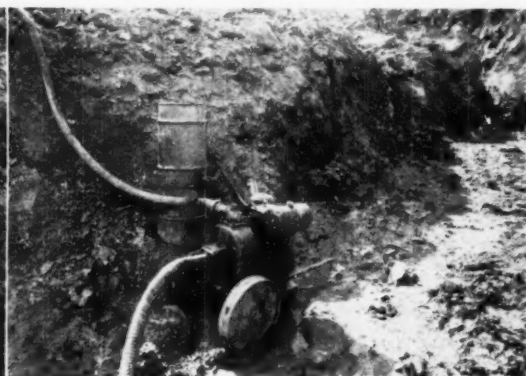
Caterpillar D-8 tractor with LaPlante-Choate blade pushing overburden at the Teramana Brothers operation.



Model 1201 Lima shovel loading coal at pit 45 of the Teramana Brothers Coal Company, near Steubenville, Ohio. This shovel is generally used for stripping.



Three inch Barnes pump in pit 45 of the Teramana Brothers Coal Mining Company.



A three inch Jeager pump working in pit 45 of the Teramana Brothers Coal Mining Company.



The Lima Model 1201 stripping shovel at the RGP Coal Company near Steubenville, Ohio.



Lorain shovel loading out coal at the RGP Coal Company.



Three draglines working in tandem stripping coal in the southern anthracite region.



Model 27FD Euclid truck with top extension at the East Diamond Mine, West Kentucky Coal Co., Madisonville, Ky. Truck is dumping 15 tons refuse over edge of waste bank—note distance from rear to back of chute.



Joy Sullivan air compressor is used for breaking up large rock at the Bruns Coal Company.

stripping by the Apex Powder Co. One Jeager 2 inch and one Barnes 3 inch pumps were also being used. The output is hauled to Toronto, a distance of 16 miles.

About a mile closer to Steubenville is the operation of the R. G. P. Coal Company which is stripping the Pittsburgh seam with a model 1201 Lima shovel and loading with a Model 120 Lorain shovel. The coal is hauled 15 miles to market.

A new, 4-page, illustrated Folder No. 2363 on Link-Belt "RC" Roller Chain Flexible Shaft Couplings has been published by Link-Belt Company.

Engineering information for proper application includes dimensions, weights, service factors and horsepower ratings.

Detailed data are also given on two types of protective grease-retaining casings—Style R (Spun Metal Revolving Type) and Style P (Plastic, Revolving Type).

A copy of new Folder No. 2363 will be sent to any interested reader upon request.

Appointment of C. J. Gerker as general manager, Ohio Hoist & Mfg. Co., Cleveland, was announced today by James W. Dickey, vice president of the Round Associate Chain Companies, with which Ohio Hoist is associated.

Mr. Gerker was formerly vice president and general manager of The Midway Tool Co., Inc., Melvin, Ohio. Previously he was associated for over 20 years with The George

Albert J. Gurney, Chief Mechanical and Electrical Engineer for the American Mine Door Company of Canton, Ohio, died February 16th at his home in Canton at the age of 77 years.

Born at Streator, Illinois, practically his whole life was spent

with the mining industry.

Prior to his connection with the above company he made his home at Herrin, Illinois, where he was chief electrician for the mines of the Madison Coal Corporation in southern Illinois.

Mr. Gurney was the inventor of



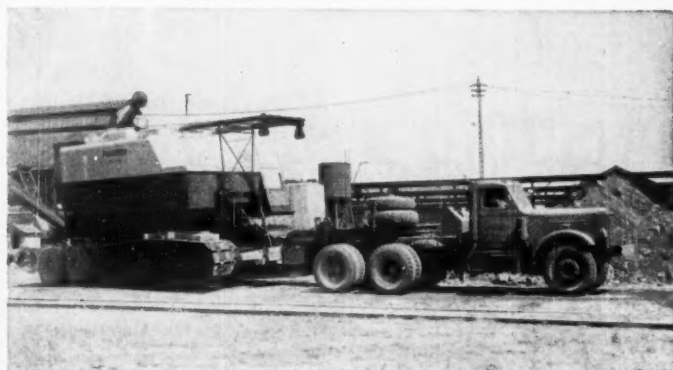
C. J. GERKER

Worthington Co., Cleveland hardware jobber.

In his new position, Mr. Gerker will be in charge of Ohio Hoist's factory at Lisbon, Ohio, and the company's executive offices in Cleveland. He will also direct the sales of the company's products through distributors.

Other Round Associate Chain Companies, through which Ohio Hoists are available, are The Bridgeport Chain & Mfg. Co., Bridgeport, Conn.; The Cleveland Chain & Mfg. Co., Cleveland, Ohio; Round California Chain Co., So. San Francisco and Los Angeles, Cal.; The Round Chain & Mfg. Co., Seattle, Wash. and Portland, Oregon; The Southern Chain & Mfg. Co., Birmingham, Ala.; and Woodhouse Chain Works, Trenton, N. J.

MOVERS of Coal Stripping and Contractor's Equipment



HEAVY HAULING RIGGING

MOORE-FLESHER HAULING CO.

MOVERS of Coal Stripping and Contractor's Equipment

TWO LOCATIONS

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And

Stoney Hollow Boulevard, Steubenville, Ohio, P. O. Box 547

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS

Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills



Drills holes faster—Will not snap off shank or chip points—Outlasts four or five ordinary augers

THE SALEM TOOL COMPANY

SALEM, OHIO, U. S. A.

the Automatic Switch Thrower and during his thirty-five (35) years service with the Company, developed the Rockdusting Machines and other products manufactured by that Company.

The first E. C. A. financed complete coal washing plant has been contracted by the Societa Mineraria Carbonifera Sarda of Italy with Roberts and Schaefer Company of Chicago, Illinois, through their foreign representatives, International Manufacturing and Equipment Co., Inc. of New York.

The plant incorporates the most modern design in coal preparation and includes screening plant, complete Baum Jig washing plant, re-treatment of fines, Hydrotator Classifier and centrifugal dryers.

The plant will have a capacity of 500 tons per hour run-of-mine coal and will produce three products: clean coal, middlings and refuse. The project includes the run-of-mine coal storage, stacking belt conveyor, the reclaimed coal belt conveyor to washer, clean coal, middlings and refuse bins, complete building and plate work and

pipng. All equipment and material will be furnished from this country while the foundation and erection will be done by the coal company under the supervision of Roberts and Schaefer Company engineers.

The above plant will be the first complete, modern American coal preparation plant in Europe.

Plasteel Products Company of Washington, Pennsylvania, announces the promotion of J. Benj. Cowan to the office of executive vice president of the company.

Mr. Cowan is a Veteran of World War I. Upon his return he spent many years in the industrial field with the Continental Can Compa-

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MINE LOCOMOTIVE HEADLIGHT

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The SCHROEDER BROTHERS HA-1 Cast Steel Headlight is designed to withstand the constant shock of Mine use.

Steel Clad Resistor units have been carefully engineered for varying voltages, to insure long Bulb Life

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SCHROEDER BROTHERS
3116 Penn. Ave. EXpress 1-1571 Pittsburgh 1, Pa.



BENJ. COWAN

ny, Carnegie Illinois Steel Company and the Aluminum Company of America.

During World War II, he served on the War Manpower Commission and was active as a member on the School Board of Canonsburg, Pennsylvania.

Mr. Cowan joined the Plasteel Products Company in 1945 as personnel manager and has been currently serving as plant manager of the company which manufactures corrugated steel roofing and siding for industrial plants and factories.

Henry Thies, 59, Manager of the Northeastern Sales Division of Joy Manufacturing Company, Pittsburgh, Pa., died January 11, 1951 following a heart attack. Mr. Thies was widely known in coal-mining circles throughout the U. S. and Canada.



STRIP MINE BLAST HOLE DRILLING

HORIZONTAL OR VERTICAL

Well prepared overburden in strip mining saves money



Our trained blast hole drilling and blasting crews will properly drill and shoot most any type of overburden, in the quickest possible time, to give you more production at lower cost.

*We operate in eastern Ohio,
western Pennsylvania and
northern West Virginia.*

Apex Powder Corporation

Distributors of Atlas Explosives

1545 Waynesburg Rd., S.E.

Phone 5-1421

Canton, Ohio

A. T. Green Machinery Co., Glenshaw, Pittsburgh, is the newly appointed distributor for WARCO motor graders. They have exclusive sales and service arrangements for western Pennsylvania and adjacent counties in Ohio and West Virginia. The firm already represents an impressive group of heavy-duty construction machinery including such lines as LaPlant-Choate, Huber, Joy-Sullivan, LaCrosse, Homestead, Owen, Page, McCarthy, P & H, Schield Bantam, Sterling and Longyear. With experienced sales representatives and complete shop facilities, they are prepared to render sound advice on equipment selection and to keep the machinery operating.

Marion, Ohio — Appointment of John C. Priest as sales representative in the Chicago district office has been announced by Marion Power Shovel Company.



JOHN C. PRIEST

A native of Piqua, Ohio, Mr. Priest served three years with the Army during World War II, including 20 months overseas in England, France and Belgium. He is a graduate of Ohio Wesleyan University, Delaware, Ohio.

Mr. Priest will work out of Marion's Chicago district office located in Room 1963, McCormick Bldg., 332 South Michigan Avenue.

Roberts and Schaefer Company announces the appointment of Mr. Laning Dress as an assistant to Mr. John E. Kalinka, Executive Vice President in charge of engineering, construction and operation in connection with execution of contracts.

Mr. Dress, a mechanical engineer

of Bucknell University, has been employed for the last decade in the mining field in various engineering positions, particularly for the last five years as Preparation Engineer for Binkley Coal Company, Chicago.

Bulletin Number 834 by the Jeffrey Manufacturing Company, Columbus, Ohio, describes the new Low Model Colmol, a continuous mining machine that cuts and loads coal, without shooting, in one operation. This bulletin describes the Centralized Operation of the machine, gives basic heights and adjustable heights as well as model numbers. Electrical and hydraulic equipment, general over-all dimensions and general specifications of Models A and B are also given.

For better service to industries in the greater Pittsburgh area, Link-Belt Company has constructed and is now operating a new Factory Branch Store located at 5020 Centre Ave., Pittsburgh 13, Pa. This new building provides ample space for stocking popular Link-Belt power transmission and materials handling products and serves as headquarters for the increased Pittsburgh personnel.

Mr. Otto W. Werner, District Manager, points out that Link-Belt has furnished materials handling, processing and power transmission machinery for many of the most successful installations in the steel, coal, aluminum, glass and other important industries in the greater Pittsburgh area.

REDUCE YOUR SPRING COSTS! USE ... PITTSBURGH AUTO SPRING



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Our Representatives Cover the Coal Field

PITTSBURGH AUTO SPRING CO. INC.

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WRITE OR PHONE MONTROSE 1-3000—1—2

The new store is easily reached by all forms of transportation, being situated just three miles from the Golden Triangle, and only one block from the well-known intersection of Morewood Ave. and Baum Blvd. There is ample parking space on the property. Street car service is available on Centre Avenue and bus lines operate on

CHAIN MANGANESE DRAGLINE CHAIN

available at once

1 1/8" . . . 1 1/2" . . . 1 3/4"



George L. Wilson & Co.

Office & Warehouse
310 MENDOTA ST. & P. R. R.
PITTSBURGH 12, PA.

Phone CEdar 1-7710

Baum Blvd. The Shadyside Station on the main line of the Pennsylvania Railroad is immediately adjacent to the property.

The Joy Manufacturing Company, Henry W. Oliver Building, Pittsburgh 22, Pa., announces the Joy Champion, a new type of blast-hole drill for strip-mines. Using the exclusive principle of rotary air-blast drilling, a Joy said to be equivalent in capacity to three or more churn drills. The Champion is operated by two men.

In addition to its higher drilling speed, the Champion is said to offer several other advantages. The hole drilled is perfectly straight and smooth-sided, permitting larger powder-charges per hole diameter. The rigidity of the drilling stem prevents bit "wander" and insures the completion of every hole started. Cracks, fissures, clay seams, or loose rock do not deflect or stop the Champion. Since no water is required, the drill is an all-weather machine.

Rotary air-blast drilling is a combination of two processes: It utilizes a tri-cone roller bit of



the oil-field type, which continuously pressure-cuts the rock, and it utilizes a blast of compressed air to remove cuttings and cool

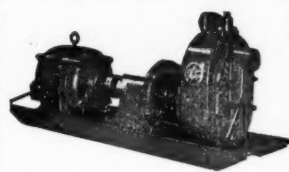
the bit. A prime factor in the high drilling-speed is the instantaneous removal of the cuttings. The bit, therefore, is always attacking virgin rock. Cuttings are automatically collected and piled beside the machine, where they are handy for stemming.

Two models are available. The Heavyweight Champion (Class 58-BH) is designed for drilling holes from 5 $\frac{3}{8}$ " to 7 $\frac{3}{8}$ " in diameter. The Middleweight Champion (Class 56-BH) drills up to 6 $\frac{1}{4}$ " holes and is recommended for softer formations.

Champion drills are mounted on crawler-treads and are provided with leveling jacks. An hydraulic feed and the semi-automatic chuck actuate the drill stem. The air-compressor is mounted directly on the machine. Either Diesel or electric drives can be supplied.

An improved type of Armor resurfacing and patching material for concrete floors is announced by The Monroe Company, Inc., Cleveland.

The new material retains all of



MARLOW SELF-PRIMING CENTRIFUGAL GATHERING PUMPS

Complete Line Carried in Pittsburgh Stock. Tel. HU 1-4400

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PUMP AND SUPPLY COMPANY

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DRILLING
PROBLEMS!

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TESTED . . . SATISFACTORY
CORES GUARANTEED

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A "Superior" line of Mine Car Couplings of all sizes
various types — All sizes, $\frac{1}{2}$ in. & larger
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- Pre-Grouting Mine Shafts
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- Large Diameter Holes for Ventilation & Escapeways

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S. E. GANE & CO.

508 Grant St., Pittsburgh, Pa.

the original Armor Features. However, because of the addition of a new, finer aggregate, it is reputed to be much more effective as an over-all floor resurfacer and to fill even the most minute cracks in concrete floors.

A armor, according to the manufacturer, is a dry cementitious type powder made up of pulverized pure oxidizing metal grains



and four different kinds of aggregate, chemicals and puzzolanic (setting agent) ingredients. The new aggregates have the approximate sum of 98% in oxide basillcan, iron and aluminum. These combine to produce a surface with unusual resistance to wear, acids, oils, etc.

A armor is shipped by the manufacturer as a dry powder. It can be used by simply adding water and applying in much the same manner as concrete.

Unlike new concrete, A armor bonds perfectly to old concrete surfaces. It provides a perfectly flush patch when used in areas of any size. Other A armor features include imperviousness to acids, oil, grease and moisture. It is ideal for use in industrial plants of every type. Because of its acid and oil-resisting qualities, it is also widely employed in dairies, laundries, distilleries, breweries, bottling plants, packing plants, refineries, textile mills, electro-plating plants, etc.

For further details, write The Monroe Company, Inc., Cleveland 6, Ohio.

Profit by our SPECIALIZATION in
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• and PUBLIC LIABILITY

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With our Specialized Engineering Service to the coal industry . . . production efficiency may be increased by analyses designed to improve production methods and cut operational costs.

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Safety hazards can prove costly when they result in work stoppages and equipment breakdowns. Continuous surveys of your safety conditions and corrective measures can aid you to lower accident frequencies and increase tonnage profits.

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C. O. C. C. prompt, efficient claims facilities help to minimize litigation time and costs, and assure the promotion of harmonious relations with all concerned.

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**COAL OPERATORS
CASUALTY COMPANY**

GREENSBURG, PA.

LINK-BELT IS DISTRIBUTING NEW CATALOG

Some measure of relief from engineering manpower shortages was in sight today as Link-Belt Company started distribution of its new 1,296-page catalog. It contains 1,673 tables and charts of basic data that greatly simplify the problems of designing all kinds of conveyor systems, mechanical power transmissions and many different types of processing machinery.

Copies of the eight-pound book, which has been three years in preparation, are being distributed as rapidly as possible to industrial and engineering firms, engineering schools, and libraries. All available copies are being used to cover engineers, estimators and purchasing executives, in whose hands this information will contribute to the rapid solution of immediate problems.

A primary function of the book, which is identified as Link-Belt General Catalog 900, is service as a reference tool. It presents basic engineering data facilitating the se-

lection of chains and wheels, drives, power transmission elements, conveyors and process machines in the combinations which will best satisfy a wide range of functional requirements and operating conditions.

The Joy Manufacturing Company of Pittsburgh, Pennsylvania, announces completion of a new twelve page, 2-color, bulletin on their popular portable light and tool lines. Its many combinations and variations of Joy String-a-lite (trade name) lighting and tool tap-off assemblies are pictured and described. According to the manufacturer these sectionalized assemblies simplify installation, reduce maintenance and increase the safety of temporary installations. Sections are interconnected at specified intervals to form a continuous circuit that is shatter-proof—water-tight and wear-resistant. Easy to install or dismantle they can be used again and again on location after location. Copies of Bulletin SL202 are available without charge to all interested parties.

Electrical Connector Division



Full steam ahead for National Defense !

Full steam ahead! That's the call of a nation rearming. Full steam ahead! That's the answer of the railroads who carry the mighty volume of raw materials, parts and finished products that America must have—and fast. And to get up "steam" the railroads need coal—this year 65 million tons of coal!

This tremendous tonnage adds up to about 12% of all the bituminous coal mined in America. Approximately half of all railroad freight gets to where it's going under power supplied by coal!

Fortunately for the railroads and the many other large coal users—the coal industry is well-prepared to fill their demands. The steel mills—the public utilities—the rubber

industry—thousands of manufacturers across the country—can be sure of the coal they need to arm America!

Better coal and more efficient production have always been the aim of America's progressive mine operators. Private management has invested hundreds of millions of dollars in modern preparation plants—research—improved equipment and new mine properties. Today the country's need for coal is great. The coal industry is ready—and able—to meet that need!

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621-S Page Diesel (two-engine) Walking Dragline: with 135' boom, 6 cy. bucket. Completely rebuilt.

618 Page Diesel Walking Dragline, with 110' boom, 5 cy. bucket. Excellent condition.

4500 Manitowoc Dragline, with twin GMC diesel engines, 120' boom, 5 cy. bucket, extra 20' boom section. Excellent condition.

2000 Lima High Lift Shovel, with 47' boom, 40' dipper handle, 4½ cy. dipper and Cooper-Bessemer engine.

111-M Marion Shovel, with twin GMC diesel engines, 3½ to 4 cy. machine. Worked about 2 years. Excellent condition.

1055 P&H Dragline, equipped with 80' boom, 4 cy. bucket and Cummins diesel engine.

1201 Lima 3½ yd. Standard Shovel, with Model L Cummins diesel engine. Excellent condition.

1201 Lima Dragline, with 85' boom, 3 yd. bucket. Very fine condition.

1201 Lima Dragline, with 100' boom, mast, 2½ yd. bucket and Cummins diesel engine. Excellent condition.

900 P&H Dragline, with 100' aluminum boom, new Caterpillar D-375 engine, 3½ yd. bucket. Good working condition.

1001 Lima Dragline, with 80' boom, 2½ cy. bucket; Waukesha diesel engine.

955 P&H L. C. Dragline, with 90' boom, 2½ and 3 cy. buckets and Buda diesel engine.

595 Link-Belt Dragline, with 85' boom, 2½ yd. bucket and Cat. D-17000 diesel engine. Excellent condition.

585 Link-Belt Dragline, with 80' boom, 2½ yd. bucket and Cat. D-17000 engine. Good condition.

48-B Bucyrus-Erie Dragline, with an 80' boom, 2½ cy. medium bucket and Buda-Lanova diesel engine. Used very little.

54-B Bucyrus-Erie Combination Highlift Shovel & Dragline, 45' boom, 34' dipper handle, 2 cy. dipper; and 80' drag boom, 2½ cy. bucket; Buda diesel engine.

3900 Manitowoc 60-ton Heavy Duty Lifting Crane, with independent boom hoist, 97' boom, Cat. D-17000 diesel engine. Dragline and clamshell attachments — no buckets.

802 Lima Dragline, with 80' boom, 2 cy. bucket, Cat. D-17000 diesel engine (1200 hrs.), wide treads and long crawlers. 1946 machine.

44-B Bucyrus-Erie Shovels, with 2 cy. dippers. Excellent condition.

37-B Bucyrus-Erie Combination Shovel and Dragline, with 1½ cy. shovel front, 60' boom, and D-13000 Cat. diesel engine. Good working condition.

604 Lima 1½ cy. Shovels, equipped with 23' boom, 18' stick and Cummins or Caterpillar D-13000 engines. Excellent condition.

34-Lima Shovels, 1 cy. dipper, 18' boom, 15' stick, long crawlers, 30" treads, GMC diesel engine. 1948 machines. Excellent Condition.

D-8 Caterpillar Hydraulic Angledozer, 8-R series. Completely overhauled.

D-7 Caterpillar Bulldozers, cable operated, in 4T and 7M series. Completely rebuilt, with Hyster Winch.

42-T Bucyrus-Erie 9" Drills. 1946 machines.

Loomis No. 44 Clipper Well Drill, with 40' steel mast, 6" drilling equipment and 6 cyl., Continental gas engine. Good working condition.

No. 12 Caterpillar Motor Grader. 1 year old. Excellent condition.

NEW PAGE BUCKETS—6½, 5, 4, 3, and 1¾ cy.

One used 4½ cy. Page Dragline Bucket

Two used 7 cy. Bucyrus-Erie "Red Arch" Dragline Buckets, in A-1 shape.

One used 8 cy. Type RHD Page Dragline Bucket.

Write, Wire or Telephone 4910, Hazleton, Pa.

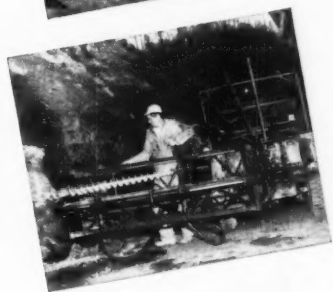
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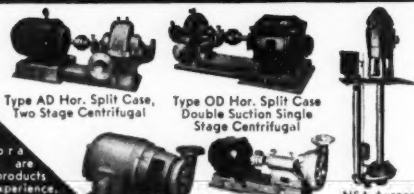
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Thorough field tests have proved that test holes can be drilled for as little as 25c per foot—and accurate samplings map underground deposits to the inch. Powered by rugged 5 H. P. 4 cycle gas engine. Easily portable into ordinarily inaccessible spots.

One man can operate easily, prospect fields more thoroughly and in less time than by other drilling methods. Churn type drill drills through frozen ground, shale, limestone, etc., to depth of 70 feet and diameters up to 2 5/8".

Water pumped into hole carries cuttings up through hollow drill for recovery and sampling as often as desired.

Without prospecting attachment the Hossfeld Rock Drill has, for years, proved itself ideal for blast hole drilling because it drills same diameter hole the full depth.

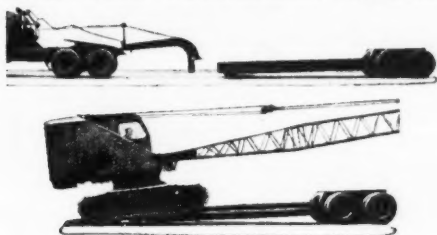
Write for new illustrated Bulletin describing the Hossfeld Rock Drill with Prospecting Attachment.

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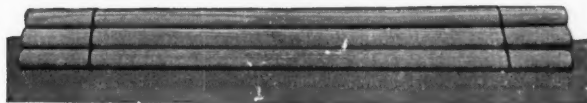
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For Tamping Explosive Shots: Poles are round
made of Hardwood. Sizes to 10 ft. long.

1" Dia.	8c per lineal ft.
1 1/2" Dia.	12c per lineal ft.
1 3/4" Dia.	14c per lineal ft.
1 7/8" Dia.	16c per lineal ft.
2" Dia.	18c per lineal ft.
2 1/8" Dia.	20c per lineal ft.
2 1/4" Dia.	22c per lineal ft.
2 1/2" Dia.	24c per lineal ft.
2 3/4" Dia.	26c per lineal ft.
3" Dia.	28c per lineal ft.

Special diameters and lengths can be furnished.
These Poles meet the requirements of the New
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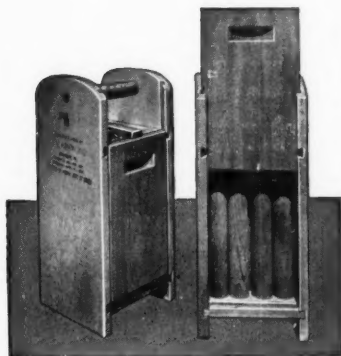


SECTIONAL TAMPING POLES

These Poles are made of straight grained wood and
are coupled together with removable wood pins held
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can be quickly connected and unconnected.

Couplers and Head Blocks are 4, 5, and 6 inches in
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are 1 1/2 inches in diameter.

Head Blocks	4" Dia.	\$3.70 Ea.
Couplers	4" Dia.	3.50 Ea.
Poles 12 ft. long	1 1/2" Dia.	3.50 Ea.
Poles 14 ft. long	1 1/2" Dia.	4.20 Ea.
Poles 16 ft. long	1 1/2" Dia.	4.80 Ea.
Poles 18 ft. long	1 1/2" Dia.	5.30 Ea.
Poles 20 ft. long	1 1/2" Dia.	7.00 Ea.
Poles 22 ft. long	1 1/2" Dia.	8.80 Ea.
Poles 24 ft. long	1 1/2" Dia.	9.60 Ea.



EXPLOSIVE BOXES: Made entirely of wood having no metal parts, tongue grooved and
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Sizes as listed based on 1 3/4" x 8" sticks.

Powder Box Prices are as follows:

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No. 16 Powder Box	3.45 Ea.	No. 50 Powder Box	7.60 Ea.
No. 20 Powder Box	3.90 Ea.	No. 72 Powder Box	8.70 Ea.

Detonator Box Prices are as follows:

No. 6 size 2 1/4" x 3" x 6" inside	\$2.15 Ea.	No. 8 size 2" x 2 1/4" x 8" inside	\$2.15 Ea.
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SPECIAL BARGAIN
3—Type A3G Goodman Duck bills.
COAL DRILLS
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COMPRESSORS—SPECIAL BARGAIN
7—240 cfm Westinghouse 3 cyl. vert. 150 lb. pres. dir. con to 50 HP. AC Slip ring or DC Motors.

MOTOR GENERATOR SETS—250 V. D.C.
Motors 220/440 v. or 2200 v.—3 hp., 60 cy.
No. KW Make RPM
3 250 Westinghouse 1200
1 250 Westinghouse 720
2 200 Westinghouse 1200
1 100 Westinghouse 700
1 100 General Electric 900
1 100 Westinghouse 600
1 100 General Electric 1800
1 100 Reliance 550
1 100 Delco 1200
2 90 Westinghouse 680
4 75 Westinghouse 720
1 75 Westinghouse 1200
1 60 Westinghouse 1200
1 NEW 50 General Electric 1800
3 40 Westinghouse 900
2 30 Westinghouse 720

125 V. DC M.G. Sets
1—100 kw. G.E. 125 v. 900 rpm. 220/440 v.
3 ph. 60 cy. AC Syn.
1—125 kw. G.E. 125 v. 1200 rpm. 220/440 v.
3 ph. 60 cy. AC.
1—75 kw. West. 125 v. 1200 rpm. 220/440 v.
3 ph. 60 cy.

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1 175 G.E. 700
3 NEW 135 G.E. 1160
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HOISTS OR WINCHES
200—1½ ton Hand Cranked ratio 27:1 thru an enclosed double reduction gear unit with 4 planetary gears mounted on steel plate complete with 48' of ¼" cable, ratchet type brake, push button release.

CAR PULLERS
100—Brand New with ¼" cable, 1½ and 2 ton A.C. or D.C. Motors.

COMPRESSORS
1—315 CFM Ingersoll Rand Portable, 100 lbs. pres. driven by 105 HP Waukesha Oil Engines, 560 rpm.

BARGAIN—FOR SALE
100 KW. Diesel Engine Generator Sets
11—100 KW., 250/275 v. D.C. Delco Generators dir. con. to 150 H.P., Model GBD-8, 6 ½ x 7, 8 cyl. Superior Diesel Engines, electric starting with muffler, power panel and accessories.

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1—Link-Belt K 480 two yard Dragline
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3—Motor graders

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Lima 802 comb. Hi-Lift and Drag Shovel.
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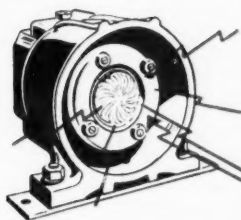
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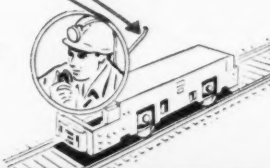


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DO YOU KNOW?

Shrinkage in cotton goods, and shrinkage in wool will be reduced by two separate processes on which unrelated patents were issued. The treatment for cotton fabrics uses a urea-alkali-zincate solution. In addition to modifying shrinkage characteristics, it eliminates fuzz and makes the cloth stiffer and more translucent.

The inventors of the process are Charles L. Mantell, Manhasset, and Oscar K. Heim, Woodside, N. Y. Rights have been assigned to the United Merchants & Manufacturers, Inc., Wilmington, Del.

In the wool-treatment process, a special type of synthetic basic amino polymer and formaldehyde are employed. The process provides a shrinkproof soft wool fabric, unlike certain other processes which produce a hard material.

Martin E. Cupery, Wilmington, Del., is the inventor. The patent issued to him is 2,526,637. E. I. du Pont de Nemours & Company has acquired patent rights.

Tires for tractors, farm implements and slow-speed industrial machines, which in use are completely filled with water, are so constructed that cushioning effects are still retained. The tire is designed to replace others on such machinery which in use are partly filled with water leaving some air for cushioning.

The inner tube of the new tire has a base portion at the side next to the rim of the casing specially constructed to provide the cushioning. This base is made of resilient rubber and has in it recesses

or annular channels into which the material of the inner tube may be displaced under forces from irregularities in the roadbed that cause bouncing.

Patent 2,526,164 was awarded to Charles O. Slemmens, South Bend, Ind., for this tire. Rights have been assigned to The B. F. Goodrich Company, New York City.

Greater safety in railroad traveling is promised with an improved electrical device to detect invisible flaws in rails on which the government issued a patent this week. A total of 892 patents was issued.

This device is an improvement over older types because it will detect flaws near rail joints, which others fail to do. Rail joints actuate the mechanism of ordinary detectors of older types. This results in the concealment of flaws within the region affected by the angle bar connector.

The new detector is for use with the Sperry flaw-detector car which is run over the tracks to determine if they are safe for trains. This car energizes the rail by passing a current of electricity through it to create an electromagnetic field around it. The flaw detector explores this field by induction methods to discover any irregularities caused by fissures in the rail.

Patent 2,527,002 was issued to Harcourt C. Drake, Hempstead, N. Y., for this device. Rights have been assigned by him to Sperry Products, Inc., Danbury, Conn.

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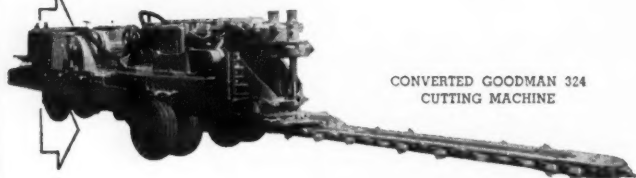
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COAL MINING

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In the $\frac{3}{4}$ to $3\frac{1}{2}$ cu. yd. size range

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MARION 362—As a coal loader, the MARION 362 is equipped with a $1\frac{1}{2}$ cu. yd. dipper, a 28'-0" boom and 21'-8" handle. As a stripping shovel, the 362 carries a $1\frac{1}{4}$ cu. yd. dipper on a 28' boom and 21'-8" handle. Dragline boom lengths from 50' to 70'.

MARION 93-M—As a coal loader, the MARION 93-M carries a $3\frac{1}{2}$ cu. yd. dipper, a 34'-0" boom and a 25'-4" handle. As a stripping shovel, the 93-M is equipped with a 2 cu. yd. dipper, a 34' boom and a 27'-6" handle. Dragline boom lengths from 60' to 80'.

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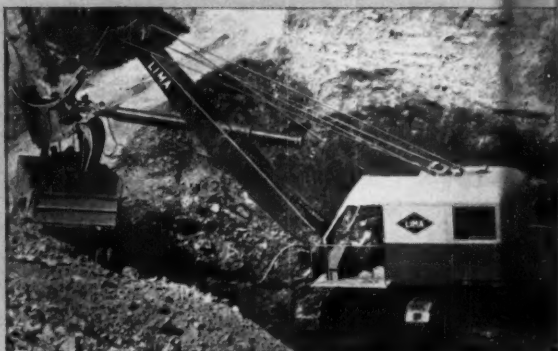
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